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Non-Technical Abstract

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Abstract

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Key Words: Attitudes, Economics of Minorities

JEL Classification: J15, R23.

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1 Introduction

Acts of intimidation and harassment aimed at ethnic minority individuals are common throughout the industrialized world. Such interracial conflict creates high immediate social costs, and discourages long term integration. It often manifests itself through social exclusion and deterioration of welfare of the ethnic groups subjected to it (for instance, see Karlsen and Nazroo, 2003, who report evidence on the positive association between racism and ill-health and psychological distress). Indeed hostile attitudes of any form towards minorities, even if they do not manifest themselves in acts of intimidation, may seriously affect the process of social and economic integration of immigrant minorities and their offsprings. Not only is harassment directly harmful to individual wellbeing but by inhibiting social and economic interaction it also limits possibilities for economic betterment of minorities. Not surprisingly, maintenance of good ethnic relations and fostering understanding between race groups is a prime objective of race relations and immigration policies. The persistence of racial harassment experienced by the resulting minority communities and hostility in attitudes towards minorities is nonetheless a continuing problem.[1]

Key questions for social scientific enquiry are the isolation of the determinants of hostile attitudes, and the circumstances under which racial harassment occurs. Below we summarize existing theory and seek to set it within a framework distinguishing different components of the processes generating harassment.

Much of our empirical analysis (as well as the existing empirical work on attitude formation, and racial violence) concentrates on the relationship between ethnic concentration in a particular neighborhood, and acts of racial harassment. It is important to recognize the complexity of this relationship. Firstly, ethnic context affects the probability of minority individuals meeting majority individuals. Secondly, it affects the attitudes of the majority population. Thirdly, it affects the probability of hostility finding expression

[1]See a recent report for the British Home Office (Statistics on Race and the Criminal Justice System 2000) and reports by Park, Curtice, Thomson, Jarvis and Bromley (2003), Bowling (1998) and Virdee (1995, 1997) for evidence.

in acts of racial harassment.

In order to distinguish clearly between hostility in attitudes and acts of harassment and violence, we emphasize the distinction between the processes, allowing nonetheless that hostile white attitudes may be one input feeding into the harassment process, but recognizing that white hostility and harassment may be related to ethnic concentration in a different way. Our work therefore constitutes empirical inquiry into "prejudiced conduct" as opposed to "prejudice" in the sense encouraged by Green, McFalls and Smith (2001). Our empirical findings support the significance of the distinction. The likelihood of a minority individual being harassed is found to decline with local ethnic concentration but to be aggravated by poor economic conditions. By contrast, expressions of attitudinal prejudice amongst white respondents are found to increase with local ethnic concentration (at least at low levels) whereas no effect can be detected from economic conditions.

Our data includes not only direct reports on frequency of experienced harassment but also evidence on precautionary behavior in response to harassment. Precautions taken on the side of the minority individual for fears of harassment and intimidation offer an alternative indicator of the intensity of harassment. Furthermore this may be more closely related to the welfare impact than a simple count of harassment incidents since these precautions are costly and therefore unlikely to be undertaken unless the harassment which they are designed to avoid is itself seriously harmful. Precautionary activity may seriously undermine life quality, with detrimental effects on the minority individual and his/her family's welfare. Precautionary behavior in a particular neighborhood may be a consequence of expected racial harassment in that same neighborhood, but may also be driven by other factors affecting the costliness of the precautions. To understand which are the driving forces of precautionary behavior is a key prerequisite for implementing policies that improve the situation of minorities. Here it is important whether improvements in the individual's immediate neighborhood lead to abolishing self-imposed restrictions on the behavior of minority individuals.

We base our empirical investigation on the British Fourth National Survey on Ethnic Minorities (FNSEM), which has been collected between 1993 and 1994. This survey

contains a "boost" sample of ethnic minorities and a random sample of white natives, and provides a wide range of socioeconomic information on respondents. In addition, the FNSEM contains specific information on different forms of racial harassment and abuse experienced by ethnic minorities. The FNSEM also contains information on how ethnic minority individuals take precautions, and change some of their habits as a response to racial harassment. Finally, the survey contains information on self-reported prejudice of white majority individuals. Our key explanatory variable is ethnic concentration in the respondent's neighborhood, which we measure on the level of small geographical units, where information is obtained from the 1991 British Census.

Our results can be contrasted with those using data from other countries. Green, Strolovich and Wong (1998) investigate the incidence of racially motivated crime in the US and its relationship with in-migration of minorities as well as economic conditions. They find a link to in-movements of nonwhites into "white strongholds" whereas our results for the UK point to association with levels rather than changes. They find little evidence of any link between hate crime and local economic conditions whereas we do find an association, though not one evident in white attitudes. In this respect our results contrast also with the US evidence in Green, Glaser and Rich (1998). Krueger and Pischke (1997) investigate the link between crime against minorities and ethnic concentration for Germany, which experienced a fast and large inflow of ethnic Germans from former Eastern countries and refugees from the former Yugoslavia in the 1990s. Their evidence suggests that high concentrations of minorities in areas of Germany have caused a rise in hostility and criminal acts against minorities.

The structure of the paper is as follows. In the next section, we discuss some theories that explain racial conflict and attitude formation, and briefly review some stylized facts on racial conflict in the UK. We then structure this discussion into a formal model encapsulating features of the main theories. Next, we develop the empirical model that we use for estimation, and discuss identification. We then introduce the data. Finally, we present the results, and provide a discussion in the last section.

2 Theories

Harassment occurs when there is a meeting between an ethnic minority individual and a prejudiced white person who chooses to harass. There are therefore three elements to such events: the hostility, the meeting and the decision to express hostility aggressively. We can theorize fruitfully about each of these aspects, drawing on papers in this literature that review different theories on the formation of racial harassment or racial prejudice. Green, Strolovich and Wong (1998), for example, provide a useful categorization of theories which we draw on below. We restrict our discussion here to the essential features of some of these models and their empirical implications, and refer the reader to the literature for more details.

Hostile attitudes

The first element, the formation of hostile attitudes towards other ethnic groups, is the subject of a very large theoretical literature. A distinction is frequently drawn (Le Vine and Campbell 1972, Quillian 1995) between sociopsychological theories positing individual origins and societal theories of group conflict.

Theories of the former type concentrate on the displacement of aggressive frustrated impulses onto external groups. Since such hostile impulses are greatest where the environment is most frustrating (Le Vine and Campbell, p.124), this is commonly supposed to provide grounds to expect an association between interracial hostility and adverse economic conditions (Dollard, Doob, Miller, Mowrer and Sears 1939, Hovland and Sears 1940, Green, Glaser and Rich 1998). Since ethnic minority numbers increase their salience as potential objects of displaced aggression there may also be reason to expect an association between minority concentration and aggression, though the form in which this relationship might be expected is far from clear.

Theories of the latter type emphasize group conflict as at the heart of patterns of hostility. *Realistic group conflict theory* suggests that racial prejudices derive from "a threat to real resources and accepted practices" of the majority population posed by minorities (Blumer 1958, Bobo, 1983). The *power-threat hypothesis* (Blalock 1967, Tolnay,

Beck and Massey 1989) says that intolerance in the white majority population is due to minorities being seen as competitors for either the economic or political power of the majority population. The level of intolerance will increase as this distance is threatened by growing concentration of ethnic minorities, suggesting therefore an increasing relationship between racial prejudice or racism, and ethnic minority concentration.

In linking racial prejudice to the competition for scarce resources, group conflict theories come closest to economic explanations for prejudice and opposition towards immigration. These economic theories are based on equilibrium models that predict adverse effects for groups that compete most intensively with newcomers in the local labor market. Scheve and Slaughter (1999), Gang, Rivera-Batiz and Yun (2002), Mayda (2003) and Dustmann and Preston (2004) among others analyze the determinants of individual preferences over immigration policies in the US and Europe respectively. In these papers, an empirical association between labor market status and attitudes is established and in some papers argued to be consistent with a determining role for labor market competition. In essence this approach suggests hostility which is not so much related to the ethnicity of the minority population as to the threat any newcomers impose to sharing of resources perceived as finite, as well as to social and political hegemony. It predicts higher sensitivity of the majority population towards any threats of economic and political hegemony in times and at places where competition for economic resources is most intense. Empirical implications are that indicators that reflect economic hardship at a geographical level should be positively correlated with the intensity of prejudice, or acts of harassment.

It is not only economic competition however that can establish grounds of interracial hostility, but also the broader collective threat to their established social and political prerogatives that the majority population perceives as coming from the minority population . According to the theory of *defended neighborhoods* (Suttles 1972, Green, Strolovich and Wong 1998), hostility to ethnic minorities is based on a fear of loss of social identity. Residents in ethnically homogeneous neighborhoods are hypothesized to define their identity through the exclusion of other ethnic groups. Racism and racial harassment are according to this theory highest in areas where one ethnicity has been dominant for a

long time but suddenly experiences inflows of a new group or is threatened by encroachment. This hypothesis suggests that it may be the *change* in ethnic composition that is a catalyst for racist prejudice and action.

Such processes may be moderated by induced population flows. As ethnic minority density increases, some whites adapt to integration, whereas the most hostile individuals may leave the neighborhood after their attempts to stop the minority inflow fail. This latter phenomenon - so-called *"white flight"* - may accelerate as ethnic density reaches a *"tipping-point"* (Clark, 1993) giving rise to nonlinearities in the relationship between ethnic balance and indicators of hostility.

Racial prejudices are sustained by acceptance of stereotyping and misrepresentation of minority practices and characteristics. The *contact hypothesis* draws attention to the role of social contact with minorities in undermining such prejudice (Pettigrew 1998, Powers and Ellison 1995). Since the frequency of such contact increases with minority concentration this may provide a countervailing force through which higher minority density reduces hostility. As Kinder and Mendelberg (1995, p.404) put it, such a view "sees racial isolation not as a safe haven for liberal tolerance but as a depository for prejudice and ignorance".

Interaction

These ideas all offer useful insight into the determination of attitudes in the majority community. However, the existence of hostility towards minorities does not necessitate the incidence of harassment.

For harassment to occur, it is necessary that majority and minority individuals come into contact. Blau (1977, 1994) points out that, other things being equal, the frequency with which ethnic minority individuals encounter whites decreases as ethnic minority concentration increases in an area, meaning that there are less opportunities for harassment to occur. For a fixed level of prejudice, the probability of a minority individual experiencing harassment should therefore decline as the size of the minority community increases. "Members of smaller groups are more likely than those of larger ones to be involved - as

victims or malefactors - in intergroup conflict (Blau 1994, p.40)."

There is good reason to think interaction may not be random. The frequency with which minorities visit locations where they are likely to encounter whites may well be affected by expected levels of prejudice. Also, while, on the one hand, weak racists may avoid areas where they are likely to meet ethnic minorities, on the other hand, extreme racists within the majority community may seek out opportunities for confrontation. Local social characteristics also affect the nature and intensity of social practices which bring different ethnic communities into contact. We use below several regressors that describe aspects of the neighborhood that may be important, including unemployment, percentage of highly educated individuals, and car usage.

Aggression

Finally, harassment requires that prejudice find violent or aggressive expression. Intensity of hostility presumably predisposes majority individuals towards harassment and to that extent the theories discussed above may also serve as theories of harassment. Harassment, however, is not simply a more extreme form of prejudice but a particular mode of manifestation. As Green, Strolovich and Wong (1998, p.398) put it: "The observed link between racial composition and racially motivated crime may be due to the ways in which prejudice is *mobilized* by demographic composition and change." For any given level of hostility in white attitudes, the likelihood of this translating into harassment may itself depend upon the circumstances of the encounter and the characteristics of the potential perpetrator and victim. Specifically, the tendency to harass, as a conscious choice of the harasser, may be expected to depend not only on strength of the desire to harass but also on the costliness of harassment to the perpetrator and on the availability of substitute forms of expression, as suggested by the literature on economics of other forms of crime (see Becker, 1968).

The *power-differential hypothesis* (Green, Strolovich and Wong 1998, Levin and McDevitt 1993) points out that minorities can protect themselves better in neighborhoods at high ethnic density and therefore white perpetrators will fear more in terms of reprisal

or punishment. This suggests there may be "safety in numbers" for minority individuals who may be less likely to suffer harassment, albeit that white hostility may be greater in areas of higher density.

Economic conditions may also be relevant in this respect. The likelihood that whites choose to express hostility through harassment may also depend upon the availability of other means of releasing dissatisfaction. More affluent, more articulate and more educated whites may, for example, be less inclined to resort to violent expression of discontent against minorities.

Summary

All these hypotheses point to a possible link between ethnic concentration on the one hand, and expressions of racial intolerance on the other, and it is this link which has been most extensively explored in previous work. To briefly summarize the main implications, theories where competition for scarce resources underlies the conflict between minorities and majorities (group threat theories) predict a positive correlation between concentration of minorities and hostile attitudes, which may result in acts of racial violence. These theories also predict that conflict is harsher the more intense the competition for resources, i.e. the more unfavorable are the economic conditions. The defended neighborhood hypothesis suggests that both the level and the change in minority concentration should matter to racial aggression. It is the sudden increase in minority concentration in areas previously unexposed to minorities which leads most strongly to conflict. Out-migration of the most aggressive individuals may lead nonetheless to a turning point in the relationship with increasing minority density.

Focus on processes of interaction predicts by contrast a decrease in exposure to harassment with increasing ethnic concentration as the probability of encountering individuals from other communities diminishes. The power differential hypothesis also comes to such a conclusion . Here racial aggression decreases with concentration as majorities find it harder to harass in areas where they may have to fear reprisal. The contact hypothesis comes to similar conclusions, but here it is ignorance that creates aggression, and

enhanced knowledge by contact that reduces aggression.

The theories also provide clear grounds to postulate links to economic conditions, both in influence on attitude formation and in the translation of such attitudes into acts of harassment. The typical prediction here is that poor economic conditions aggravate conflict both by generating frustration in the majority community which can be displaced into interracial aggression and by sharpening intergroup competition for resources.

These theories are not exclusive, pointing as they do to effects which can coexist. To the extent that predictions are unambiguous and uncontested by the predictions of other theories they can be tested but where theories suggest counteracting effects we can aim only to estimate the balance between them.

3 Ethnic Concentration and Harassment

In this section we set out a model of the mechanism behind the relationship between ethnic composition and racial harassment at a local level. Our analysis will not explicitly attempt to test one of the above mentioned theories against another; we believe that each of these hypotheses contributes in some way to explain racial aggression. We will however develop a model that subsumes, and is motivated by a variety of theoretical explanations.

Our main aim is the estimation of an inclusive harassment equation capturing the impact of individual and contextual variables through *all* channels, including influences on precautionary activities, internal migration and so on. While it would be desirable to separate effects arising through different channels it is not easy to think of plausible restrictions allowing identification.

It is also unlikely that all individuals belonging to a minority population are equally affected by racially motivated aggression. Individual-specific features may explain a lot of variation in being victimized. For instance, male minority individuals may be more or less exposed to racial harassment than females, as a consequence either of the attitudes of potential harassers or of differences in the social and occupational situation of the potentially harassed.

Our approach tries to take account of some of these issues. We define for each potential

victim i a rate of arrival of harassment incidents λ_i, which is the product of the probability of meeting a white racist μ_i and the probability of that person choosing to harass or insult ν_i given the encounter. Both these probabilities depend in principle on individual specific characteristics, as well as the local minority concentration, and the change in the local minority concentration, both through the impact on white attitudes and directly.

More formally,

$$\begin{aligned} \lambda_i &= \mu_i \nu_i && (1) \\ \mu_i &= f(A_{j(i)}, \pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}, n_i) && (2) \\ \nu_i &= g(A_{j(i)}, \pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}, n_i) && (3) \\ \Rightarrow \lambda_i &= h(A_{j(i)}, \pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}, n_i) && (4) \end{aligned}$$

where $j(i)$ is the area in which the ith individual lives, A_j is the hostility in attitude of white individuals towards minorities in the jth area, π_j is the concentration of ethnic minorities in the jth area and $\Delta\pi_j$ is the change in ethnic concentration in that area. Other characteristics of the jth area are denoted by Z_j, and X_i denotes other individual characteristics. Finally, n_i is the degree of precaution taken against meeting white racists.

Attitudes of white individuals in a particular area depend themselves on area characteristics including π_j:

$$A_j = F(\pi_j, \Delta\pi_{j(i)}, Z_j) \quad (5)$$

Notice that this formulation acknowledges different sources of racial aggression, as put forward by above mentioned theories. Theories of interaction concentrate on the fact that λ_i decreases with ethnic concentration because μ_i increases. The power threat hypothesis is not explicit about μ_i, but predicts that ν_i increases with ethnic concentration. Similarly the defended neighborhood hypothesis suggests that ν_i increases if the change in ethnic concentration is large within a low concentration areas, but does not specifically concern μ_i. Selective out-migration leads both μ_i and ν_i to decrease. Finally, the power differential hypothesis, again, refers to ν_i rather than μ_i.

On the whole theories are quiet on the way minority individuals may react to perceived threat from majorities. Precautionary behavior such as going out less frequently, making

the home safer and so on, is a decision which will be motivated both by the prevalence of harassment in the area and personal circumstances and characteristics which make harassment harmful,

$$n_i = G(\lambda_i, X_i, Z_{j(i)}) \tag{6}$$

with $\partial G/\partial \lambda$ positive.

A partially reduced form for this system relates harassment and precaution jointly to local characteristics, including local white attitudes, and personal circumstances

$$\lambda_i = L(A_{j(i)}, \pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}) \tag{7}$$

$$n_i = N(A_{j(i)}, \pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}). \tag{8}$$

The fact that $A_{j(i)}$, $\pi_{j(i)}$ and $\Delta\pi_{j(i)}$ enter (6) only through λ_i implies cross-equation (proportionality) restrictions on the way that these enter (7) and (8) which could be tested with suitable data.

These equations pick up effects of ethnic context π_j on harassment intensity given white prejudice. However we can also substitute from (5) to develop a fully reduced form capturing total dependence of harassment on π_j incorporating its effect on white attitudes

$$\lambda_i = \Lambda(\pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}) \tag{9}$$

$$n_i = H(\pi_{j(i)}, \Delta\pi_{j(i)}, X_i, Z_{j(i)}). \tag{10}$$

Which of these we choose to estimate will depend upon the availability and reliability of information on local attitudes of the white community.

Structural identification of (4) and (6) requires exclusion restrictions in the harassment equation that are unlikely to be plausible. Characteristics which might encourage precaution without affecting harassment propensities directly might be those which affect the costliness to the victim of being harassed but in so far as these are observable by potential harassers it is difficult to justify the exclusion required. Racism may, for instance, encourage people to direct harassment at the most vulnerable.

Restrictions which might allow separation of effects through μ_i and through ν_i are also difficult to imagine. Since several ambiguities have been identified in effects coming

through $f(\cdot)$ and through $g(\cdot)$ overall impact of white attitudes and of ethnic densities on harassment are difficult to sign. [2]

[2]We may worry about endogeneity of location choice $j(i)$ if our interest is in identifying effects conditional on fixed location. Moving house is after all one extreme form of precaution. This could motivate instrumenting $A_{j(i)}$ and $\pi_{j(i)}$ if suitable instruments exist but arguments for these tend to be tenuous. We do not follow this route.

4 Empirical Implementation

Our data covers the frequency of harassment H_i. If incidents of harassment arrive at rate λ_i then the probability of being harassed k times is

$$\Pr(H_i = k|\lambda_i) = e^{-\lambda_i}\lambda_i^k/k! \tag{11}$$

We let $\ln \lambda_i = X_i\beta + \epsilon_i$ where X_i includes all relevant observed characteristics and ϵ_i captures unobserved influences on harassment propensity.

We also observe a discrete indicator of precautionary activity n_i which we take to reflect a latent underlying disposition to precaution n_i^* where $n_i^* = X_i\alpha + \eta_i$ and η_i captures unobserved influences on precautions taken. We partition the range for n_i^* such that observed precaution falls into the dth of D observed categories if $\delta_{d-1} < n_i^* \leq \delta_d$ where $\delta_0 = -\delta_D = -\infty$.

Let the joint density of ϵ and η be denoted $p_{\epsilon,\eta}(\epsilon, \eta)$, the conditional density of ϵ given η be $p_{\epsilon|\eta}(\epsilon|\eta)$ and the marginal density of η be $p_\eta(\eta)$. Then the likelihood contribution for the ith observation is

$$\begin{aligned}\Pr(H_i = k, \delta_{d-1} < n_i^* \leq \delta_d|X_i) = \\ \frac{1}{k!}\int_{\delta_{d-1}-X_i\alpha}^{\delta_d - X_i\alpha}\int_{-\infty}^{\infty} e^{-\exp(X_i\beta+\epsilon)}e^{(X_i\beta+\epsilon)k}p_{\epsilon,\eta}(\epsilon,\eta)\mathrm{d}\epsilon\mathrm{d}\eta \\ = \int_{\delta_{d-1}-X_i\alpha}^{\delta_d - X_i\alpha}\left[\frac{1}{k!}\int_{-\infty}^{\infty} e^{-\exp(X_i\beta+\epsilon)}e^{(X_i\beta+\epsilon)k}p_{\epsilon|\eta}(\epsilon|\eta)\mathrm{d}\epsilon\right]p_\eta(\eta)\mathrm{d}\eta\end{aligned}$$

We choose a normal distribution for η and a conditional gamma distribution for e^ϵ

$$\mathrm{e}^\epsilon|\eta, X_i \sim \Gamma(\mathrm{e}^{\psi\eta}, \zeta) \tag{12}$$

$$\eta|X_i \sim \mathcal{N}(0,1). \tag{13}$$

Here

- ψ captures correlation between harassment and precaution arising either from the influence of one on the other or from correlation in unobserved influences on the two. If $\psi = 0$ then the specification reduces to the combination of an independent ordered probit and negative binomial count model. We report estimates of such independent specifications alongside estimates of the joint model.

- ζ allows for two things. Firstly it permits unobserved variation in harassment propensity λ_i independent of precautionary behavior. Secondly it divorces the mean and variance of the harassment process, allowing for "overdispersion" or "underdispersion" in the harassment equation relative to a Poisson model. As $1/\zeta \to 0$ then the specification reduces to one in which harassment follows a Poisson process with unobservable influences perfectly correlated in the two latent specifications.

With the specification in (12) and (13) we can integrate to derive (see Cameron and Trivedi 1996)

$$\Pr(H_i = k, \delta_{d-1} < n_i^* \leq \delta_d | X_i) = \int_{\delta_{d-1} - X_i\alpha}^{\delta_d - X_i\alpha} \left[\frac{\Gamma(k+\zeta)}{\Gamma(k+1)\Gamma(\zeta)} \left(\frac{\zeta}{\zeta + X_i\beta + \psi\eta} \right)^{\zeta} \left(\frac{X_i\beta + \psi\eta}{\zeta + X_i\beta + \psi\eta} \right)^{k} \right] \phi(\eta) \mathrm{d}\eta \quad (14)$$

This formula involves only a single integral which we compute numerically (by Gauss-Legendre quadrature). In cases where precaution behavior is unrecorded we integrate over the whole real line.

There are cross equation restrictions involving proportionality of coefficients on variables hypothesized to enter the precaution equation only through λ_i, namely those involving white attitudes and ethnic density. We report unrestricted estimates but also calculate χ^2 tests of the restrictions by minimum distance methods.

Standard error calculations are made so as to be robust to geographical clustering in the unobserved variation.

5 Data

The data we use for our analysis comes from the Fourth National Survey for Ethnic Minorities (FNSEM). The FNSEM is a cross-section survey collected between 1993 and 1994. It consists of a main sample of respondents belonging to ethnic minorities, and a reference sample of individuals belonging to the white majority population. In the survey, 59% of the ethnic minority sample was selected from wards where, according to the 1991 Census data, ethnic minorities represent at least 10 percent of the whole population. About 38% were selected from areas with ethnic concentration between 1 and 5 percent and the rest in areas with concentration of less than 1 percent. In contrast, the white reference sample was a random sample in the population.

One section of the survey is dedicated to "victimization" experienced by ethnic minority individuals in the year previous to the interview. Various incidents are recorded, such as personal attacks, property damage, and insult and whether the victim believed such incidents were based on reasons of race or color. Furthermore, the white respondents' sample contains a set of questions on self-reported prejudice towards different types of ethnic minorities. These can be used to estimate the relationship between the average attitudes surrounding ethnic minority individuals and the probability that they are harassed.

We base our estimations on the indicator of a milder form of harassment, whether the respondent has been insulted "for reasons to do with race or color". Information on more serious forms of harassment is available only for less than half of the victimized sub-sample and would heavily reduce sample size. Furthermore, the racial component in an insult should be relatively straightforward to determine [3]. Although less serious, the incidence of such milder forms of harassment is more common than other forms and still likely to have disruptive consequences on the degree of integration of minorities in the society.

The data gives information both on whether or not the individual has been harassed

[3]The wording of the question in the survey is as follows: "In the last twelve months, has anyone insulted you for reasons to do with race or color? By insulted, I mean verbally abused, threatened or been a nuisance to you?"

and if so how often. We wish to make use of the latter information to ensure we take fullest account of differences in frequency of insult. However we also have to appreciate that there is considerable bunching and rounding[4] in this data at higher frequencies as well as an imprecise category corresponding to a frequency too high to count. We therefore group this with all frequencies of 6 times or above, calculating the appropriate likelihood contribution appropriately. We provide frequencies in table 1

About half of the sample were also asked about precautions taken in response to concern about harassment. Fourteen different possible precautions were suggested, some more commonly undertaken than others. The full list is given in Table 2. We focus on the four most commonly taken of those potentially available to all respondents (including the childless) and add up the number of precautionary activities entered into as our measure (see table 3).

Table 1: **Harassment: Annual frequency of occurrence**

Frequency	Percentage of sample
None	90.2
1	2.2
2	2.2
3	1.0
4	0.6
5	0.6
6 or more	2.9
Number of cases	4935

In addition, the FNSEM contains extensive information on both personal sociodemographic characteristics of the interviewees and characteristics of the localities in which they reside. Table 4 reports the means and standard deviations of variables that measure both personal characteristics of the respondent and aspects of their localities. Figures are given for both white and black subsamples.

A central interest is in the impact of ethnic concentration and this information comes

[4]There is a small isolated spike at 52 times a year, for instance, clearly corresponding to (roughly) once a week.

Table 2: **Precautions**

Precautions	Percentage of sample
Avoiding going out at night	9.0
Making home safer	7.8
Visiting shops only at certain times	5.4
Avoiding going out alone	4.1
Stopping children playing	4.5
Avoiding white areas	3.1
Changing travel routes	2.5
Worshipping less frequently	1.9
Stopping going to pubs	1.8
Changing telephone number	1.4
Making business premises safer	1.3
Stopping use of public transport	1.2
Moving home	0.5
Moving school	0.2
Number of cases	2263

Table 3: **Number of key precautions undertaken**

Number	Percentage of sample
None	90.5
1	3.0
2	2.8
3	2.6
4	1.2
Number of cases	2263

from the UK census at ward level.[5] This allows us to capture the wide diversity in local ethnic composition within regions and, consequently, gives sufficient variation across different geographical units for subsequent analysis. According to the 1991 Census of population, in the UK, almost 80% of ethnic minorities live in the South East (mainly Greater London) and the Midlands regions. Inside these regions, however, ethnic concentration varies widely across smaller areas, such as wards.

The sociological literature points to arguments for expecting both the level and the recent change in minority concentration to matter to white hostility (as discussed above). The 1991 census collected information on racial identities of the population and this forms the basis for our measure of current ethnic minority concentration, calculated as the percentage of the ward population who are Asian or black. However this information was not collected in the previous 1981 census and is therefore unavailable for the purpose of constructing information on dynamics of ethnic concentration. What is present in both 1991 and 1981 censuses is information on country of birth and we use this to construct a measure of changes in ethnic density based on the percentages of immigrants from South Asia and the West Indies. These particular sources are the main geographical origin of ethnically different immigration to the UK (excluding only East Asia).[6]

The availability of the white sample and the inclusion of questions to them on prejudice towards minorities allows us, to a limited extent, also to construct for the black sample measures of local white prejudice. We can therefore begin to explore the extent to which frequency of harassment depends on the prejudicial attitudes of the white community in the area where the individual lives by including this as conditioning information. Our data here concerns broad expressions of prejudice against minorities. As Smith (1989, p.150) notes, it is possible that such "low-level" attitudes "provide a reservoir of procedural norms that not only tacitly inform routine activity, but are also available to legitimize more purposive, explicitly racist, practice."

[5]In the UK, a ward is the smallest geographical area identified in the Population Census, and typically comprises about 7000 individuals.

[6]The measure for 1991 on concentration of immigrants is very highly correlated with the measure of ethnic concentration, the correlation coefficient being 0.97.

Specifically, to investigate this, we add a variable indicating the average attitudes against minority individuals at *county* level. We are unable to use such a regressor at ward level because of the survey sampling design described above. The white sub-sample typically live in different wards from ethnic minority respondents and this leaves too small a number of observations which would match the minority sample at ward, or even district, level. Therefore, we aggregate to county level, appreciating nonetheless that we may consequently be matching black respondents with the attitudes of white respondents who may be geographically fairly distant.

The impact of ethnic context on attitudes of this type is investigated in many papers, including, for the UK, Dustmann and Preston (2001). We should avoid thinking of the estimates including this measure of white attitudes as an estimate however of (7) and (8) rather than of (9) and (10), since the questionnaire responses on which the data is based can only hope to pick up a limited subset of relevant white attitudes.

Our other central focus is on the role of local economic conditions. We incorporate census information on local measures of economic deprivation, including percentages of population unemployed, lacking education, sharing residential facilities and lacking central heating. As Table 4 makes plain, the black sample lives in more deprived areas according to any measure.

At the personal level we make use of data on demographic status, including age and children, labor market status and education. In our estimations, we include three education dummies indicating whether individuals have university education, A-levels or vocational qualifications. Education is likely to influence the type of socioeconomic environment in which the individual interacts. Therefore, it can affect the probability of being harassed. Attitudes and, in particular, propensity to harass may vary in different socioeconomic environments. In addition, individuals with different qualifications may come in contact with white people to different extents. Moreover, education may also reflect different degrees of sensitivity to harassment.

The average age of minority individuals in the sample is 39 years. Age may be another determinant of the propensity to be harassed. Older individuals, for example, may tend

to go out less or to go to places less frequented by white individuals. In addition, potential harassers may prefer to target certain age groups rather than others.

We also consider how the ethnic groups identified in the sample, namely Black Caribbean, Indian, African-Asian, Pakistani, Bangladeshi and Chinese may be victims of harassment to a different extent. Ethnicity may indicate the extent to which cultures differ from the majority one and the extent to which different ethnic groups have integrated in British society. Racial abuse may be experienced particularly by individuals whose look and behavior are perceived as radically different from those of the white majority population. Accordingly, we also look at different harassment experiences for ethnic minority immigrants and native born ethnic minorities. Natives may tend to mix with whites more than immigrants. In the sample, 78 percent of ethnic minorities were born abroad.

Table 4: **Descriptive Statistics**

	Black sample		White sample	
Variable	Mean	S.d.	Mean	S.d.
Local				
% Black/Asian	0.331	0.297	0.042	0.080
Δ % Immigrant	0.018	0.036	0.002	0.007
% Prejudiced	0.359	0.069	0.295	0.072
London	0.402	0.490	0.097	0.296
% Unemployed	0.163	0.076	0.087	0.047
% With degree	0.067	0.052	0.069	0.053
% Sharing facs	0.023	0.018	0.010	0.013
% No cent heating	0.263	0.151	0.168	0.117
Personal				
Male	0.488	0.500	0.422	0.494
Age/10	3.870	1.515	4.761	1.907
Has children	0.592	0.491	0.299	0.458
No of children	1.512	1.691	0.563	0.986
Degree	0.113	0.317	0.080	0.271
Voc training	0.182	0.386	0.240	0.427
A Level	0.208	0.406	0.318	0.466
Unemployed	0.146	0.353	0.060	0.238
Student	0.099	0.299	0.032	0.176
Out of lab force	0.322	0.467	0.411	0.492
Foreign born	0.777	0.417	0.053	0.225
Caribbean	0.234	0.423	.	.
Indian	0.247	0.431	.	.
Afro Asian	0.140	0.347	.	.
Pakistani	0.228	0.420	.	.
Chinese	0.040	0.196	.	.
Sample	5098		2780	

In table 5 we display evidence on the incidence of experiencing racial harassment, worries about being racially harassed, and precautions, for different quartiles of the distribution of ethnic concentration. The incidence of harassment is clearly declining, with individuals in areas with highest concentrations reporting lowest incidences. Precautions seem to be more U-shaped, increasing first, but then decreasing.

Table 5: **Precautions and harassment, quartiles of ethnic concentration**

		Quartiles of Ethnic concentration			
	All	1st Q	2nd Q	3rd Q	4th Q
Insulted in last 12 months	0.098	0.126	0.112	0.087	0.065
Worried about being racially harassed	0.226	0.250	0.251	0.252	0.147
Avoiding going out at night	0.090	0.081	0.109	0.100	0.069
Making home safer	0.078	0.072	0.085	0.095	0.061
Visiting shops only at certain times	0.054	0.051	0.073	0.060	0.034
Avoiding going out alone	0.041	0.030	0.043	0.059	0.030

6 Results and discussion

Harassment

Table 6 presents estimation results from the negative binomial count model, where we model the number of occurrences of racial harassment.[7] All specifications condition on a set of individual observed characteristics, as well as a dummy variable for London. There are several well determined individual level demographic and socioeconomic effects. Men are more likely to suffer harassment. There is a nonlinear relationship with age[8] typically peaking for individuals in their 30s. The more educated are more harassed. Furthermore, those born outside the UK are less likely to be harassed. These effects may come from the different milieux frequented by persons with different characteristics or from differences in demeanor which attract or repel the attention of harassers. Different ethnic groups suffer harassment of differing intensity.

[7] All estimates, for this and other specifications, are reported with standard errors robust to ward level cluster effects in unobserved heterogeneity.

[8] Age is measured in tens of years.

The role of ethnic density is a first focus of attention. The first column presents results with a single linear ethnic concentration variable, measured on ward level. These results point clearly towards lower harassment in areas of higher minority concentration, consistently with an interaction-based story or with a "safety in numbers" effect as predicted by the power differentials hypothesis. The second column adds a quadratic term yielding some evidence of curvature with the marginal effect diminishing as minority concentration increases though it does not flatten off until quite high levels of ethnic density. No evidence of any impact from rate of change in ethnic density is apparent from results in the third column, contrary to the predictions of the defended neighborhoods argument.

The final column adds a variable reflecting mean white hostility at county level as measured by responses of white individuals within the same survey. The effect is negative, which is surprising. It may be that the sort of attitudes picked up by the questions on prejudice asked to white respondents are those which discourage contact with ethnic minorities rather than aggressive confrontation with them.

A role for local economic conditions is also evident. Local unemployment seems to be associated with higher harassment, even conditional on white attitudes. The results in Dustmann and Preston (2001) point to no identifiable impact of white unemployment on prejudice or hostility to minorities - a result which, to anticipate, we find again when looking at white attitudes below. It is interesting that these results are indicative of greater harassment, perhaps because unemployment provokes greater hostility in the expression of negative attitudes or because it puts a pool of unemployed individuals into contact with others in circumstances where hostile outcomes can easily occur. We can contrast our findings with those of Green, Strolovich and Wong (1998, p.373) for the US who "...turn up no relationship between unemployment rates and racially motivated crime." Poverty of local housing conditions also appears to have an association with intensity of harassment in some specifications.

Table 6: **Harassment: Independent Negative Binomial**

Variable	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.
Local								
% Black/Asian	-3.252	0.393	-6.373	1.120	-6.414	1.707	-6.061	1.854
(% Black/Asian)^2	.	.	7.958	2.612	7.874	4.199	5.928	4.324
Δ % Immigrant	.	.	.	.	0.339	1.606	-0.429	1.667
% Prejudiced	.	.	.	.	.	.	-2.069	0.691
London	0.349	0.066	0.429	0.072	0.571	0.091	0.818	0.126
% Unemployed	2.318	0.623	2.633	0.646	2.411	0.946	2.843	1.042
% With degree	0.288	0.600	0.373	0.616	-0.541	0.786	-0.433	0.861
% Sharing facs	3.853	1.699	3.952	1.681	2.713	2.154	1.874	2.229
% No cent heating	-0.929	0.300	-0.701	0.305	0.056	0.383	-0.065	0.410
Personal								
Male	0.387	0.061	0.382	0.061	0.333	0.072	0.263	0.074
Age	2.689	1.532	2.825	1.547	3.796	1.780	3.910	1.957
Age^2	-3.762	1.821	-3.899	1.838	-4.055	2.117	-4.274	2.383
Has children	0.097	0.086	0.110	0.087	0.046	0.099	-0.026	0.108
No of children	-0.021	0.230	-0.054	0.229	0.461	0.253	0.525	0.272
Degree	0.426	0.086	0.425	0.087	0.575	0.103	0.562	0.105
Voc training	0.230	0.083	0.236	0.083	0.307	0.095	0.304	0.093
A Level	0.309	0.068	0.308	0.068	0.323	0.088	0.388	0.089
Unemployed	-0.212	0.071	-0.198	0.071	-0.175	0.079	-0.112	0.080
Student	0.095	0.104	0.111	0.106	0.184	0.124	0.269	0.128
Out of lab force	-0.199	0.086	-0.198	0.088	-0.111	0.100	-0.116	0.105
Foreign born	-0.483	0.083	-0.484	0.084	-0.614	0.093	-0.605	0.096
Caribbean	0.516	0.129	0.508	0.131	0.770	0.164	0.832	0.178
Indian	0.258	0.137	0.259	0.138	0.539	0.165	0.651	0.199
Afro Asian	0.633	0.133	0.635	0.134	0.930	0.178	1.066	0.209
Pakistani	0.537	0.126	0.541	0.127	0.843	0.158	1.038	0.180
Chinese	0.584	0.147	0.556	0.153	0.987	0.177	1.153	0.203
Constant	-2.479	0.336	-2.468	0.338	-3.178	0.445	-2.703	0.553
ζ	1.473	0.054	1.474	0.054	1.483	0.065	1.499	0.073
Mean log-likelihood	-0.556		-0.556		-0.588		-0.588	
Number of cases	4930		4930		3651		3430	

Precautions

In table 7 we present results from the precaution equation. The pattern of results regarding local area characteristics is very much compatible with the findings from direct analysis of harassment. As with harassment, precautions seem to decrease with ethnic concentration, though the effect is well determined only in the linear specification. As before, the effect of changes in ethnic composition on precautions is positive, but not significant. There is no strong evidence of association with local white prejudice. Local unemployment nonetheless appears possibly to be associated with more precautionary behavior.

There are few significant effects from personal characteristics although those with more children do seem more inclined to undertake precautions and there are some differences among racial groups (with Caribbeans noticeably disinclined to precaution).

Joint Estimation

Not all determinants of precautions and harassment are observable. Much variation in these two variables is explained by unobservables. In table 8 we present results of a joint model, where we allow the unobservables in the two equations to be correlated. The estimates point very conclusively towards a positive value for ψ showing that harassment and precautionary behavior are positively associated either because of correlation in unobserved influences or because precaution responds to the prevalence of harassment.

The main influences remain well identified when estimated jointly. In particular, our key finding of a negative relationship between ethnic concentration on the one hand and the incidence of harassment and of precautionary responses on the other continues to find strong support in these estimates (although specifications with nonlinear terms are less well estimated). There is still no clear evidence of any effect from changes in immigrant numbers and the puzzling result on association with local white prejudice has now disappeared. At the same time, some evidence of association between local unemployment and harassment remains apparent.

Table 9 presents some of the same results in terms of the implied marginal effects at

Table 7: **Precaution: Independent Ordered Probit**

Variable	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.
Local								
% Black/Asian	-2.262	0.662	-2.010	1.874	-2.956	2.635	-3.151	2.928
(% Black/Asian)^2	.	.	-0.676	3.957	-0.156	5.427	0.548	5.893
Δ % Immigrant	.	.	.	.	2.048	2.016	1.872	2.083
% Prejudiced	.	.	.	.	.	.	-0.409	1.012
London	0.370	0.128	0.362	0.140	0.476	0.225	0.492	0.248
% Unemployed	2.569	0.909	2.593	0.962	2.875	1.419	2.739	1.496
% With degree	0.772	1.405	0.826	1.452	-0.050	1.978	0.179	2.030
% Sharing facs	-1.519	3.178	-1.495	3.213	0.335	3.773	0.219	3.811
% No cent heating	-0.224	0.394	-0.247	0.437	0.087	0.542	0.245	0.606
Personal								
Male	-0.033	0.098	-0.032	0.099	-0.084	0.117	-0.088	0.117
Age	2.102	1.799	2.185	1.805	1.900	2.086	2.235	2.087
Age^2	-2.788	2.013	-2.874	2.012	-2.021	2.244	-2.323	2.246
Has children	-0.026	0.112	-0.027	0.114	0.035	0.123	0.045	0.127
No of children	0.534	0.278	0.538	0.282	0.630	0.318	0.572	0.334
Degree	0.044	0.118	0.044	0.118	0.015	0.142	0.059	0.144
Voc training	-0.077	0.129	-0.075	0.128	-0.148	0.167	-0.099	0.169
A Level	0.256	0.105	0.258	0.105	0.352	0.117	0.394	0.121
Unemployed	0.195	0.129	0.195	0.130	0.163	0.148	0.213	0.151
Student	-0.150	0.211	-0.150	0.214	-0.078	0.261	-0.069	0.274
Out of lab force	0.219	0.125	0.220	0.127	0.161	0.150	0.186	0.160
Foreign born	0.101	0.141	0.099	0.140	0.066	0.167	0.064	0.173
Caribbean	-0.527	0.201	-0.527	0.202	-0.641	0.208	-0.679	0.212
Indian	0.054	0.169	0.057	0.169	0.127	0.191	0.090	0.195
Afro Asian	0.258	0.178	0.261	0.178	0.307	0.206	0.271	0.212
Pakistani	0.100	0.176	0.102	0.176	0.116	0.198	0.031	0.199
Chinese	-0.266	0.248	-0.265	0.249	-0.410	0.310	-0.385	0.313
Constant	-2.093	0.411	-2.126	0.412	-2.253	0.484	-2.209	0.563
δ_2-δ_1	0.214	0.032	0.215	0.032	0.213	0.037	0.207	0.036
δ_3-δ_2	0.290	0.034	0.290	0.034	0.312	0.040	0.323	0.042
δ_4-δ_3	0.509	0.062	0.510	0.063	0.510	0.067	0.489	0.067
Mean log-likelihood	-0.421		-0.421		-0.439		-0.448	
Number of cases	2261		2261		1662		1570	

Reference individual is of Bangladeshi origin.

mean values of characteristics on probabilities of *any* harassment and of *any* precaution, respectively. We see from the results in the first set of columns that an increase of ten percentage points in ethnic minority concentration is estimated to reduce the probability of either by between three and four percentage points. The figures at the base of the table are predicted Goodman Kruskal γ coefficients taken again at mean characteristics - the values consistently exceeding 0.9 points to a very strong correlation between harassment and precaution beyond that explained by the observed variables.

At the base of Table 8 we report χ^2 tests of the cross equation proportionality restrictions implied by the hypothesis that all local ethnic concentration and prejudice variables affect harassment and precaution through a common channel. These restrictions are consistently accepted at the 5% level.

Attitudes of white respondents

As we explain above, our data covers a random sample of white respondents who provide the same background information as the ethnic minority sample, and who are interviewed about a set of minority related issues. Much theorizing about harassment relates to the determination of such attitudes and the availability of such data gives us the chance to look at this directly. We concentrate here on an analysis of two questions. Question 1 is an index on prejudice. Individuals were asked whether they are a little or very prejudiced towards individuals of different characteristics. We use here the responses to ethnic minorities of Caribbean or Asian origin. We create an indicator variable which is equal to one if individuals assess themselves as being at least a little prejudiced against either of the two groups.[9]

Respondents were also asked about their attitudes towards inter-ethnic marriage. The exact wording of the question is given in the footnote to table 10. Again, we construct an indicator variable which equals one if the respondent minds if a close relative marries an ethnic minority individual.

[9]We have experimented with more detailed classifications, but results were very similar. For ease of interpretation, we use a simple binary variable.

Table 8: **Harassment and Precaution: Joint Model**

	Harassment		Precaution		Harassment		Precaution		Harassment		Precaution		Harassment		Precaution	
Variable	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.
Local																
% Black/Asian	-5.636	1.051	-1.432	0.473	-8.193	2.846	-1.051	1.393	-8.577	4.347	-1.987	1.927	-8.265	4.677	-2.875	2.146
(% Black/Asian)^2	.	.	.	.	7.005	6.633	-0.831	2.941	6.010	10.640	-0.035	4.376	4.425	10.981	1.779	4.732
Δ % Immigrant	.	.	.	.	.	.	.	.	0.277	4.102	1.157	1.596	-0.760	4.404	1.196	1.708
% Prejudiced	.	.	.	.	.	.	.	.	.	.	.	.	-0.063	1.845	1.171	0.854
London	0.495	0.184	0.329	0.089	0.546	0.199	0.314	0.098	0.693	0.265	0.375	0.135	0.723	0.375	0.335	0.174
% Unemployed	3.851	1.623	1.638	0.749	4.043	1.688	1.550	0.794	4.579	2.722	2.334	1.052	4.657	2.977	2.207	1.172
% With degree	0.375	1.888	0.008	1.103	0.628	1.969	-0.032	1.150	-0.637	2.761	-0.611	1.481	-0.843	2.945	-0.630	1.564
% Sharing facs	9.815	4.645	0.826	2.290	9.334	4.716	0.937	2.371	8.065	7.387	0.585	3.036	9.080	7.417	0.927	3.072
% No cent heating	-1.489	0.777	-0.211	0.349	-1.336	0.775	-0.257	0.374	-0.838	1.133	-0.075	0.484	-1.246	1.159	0.091	0.513
Personal																
Male	0.569	0.162	-0.050	0.079	0.555	0.165	-0.051	0.079	0.534	0.215	-0.059	0.097	0.513	0.232	-0.067	0.099
Age	4.040	3.620	2.342	1.578	3.744	3.632	2.294	1.571	3.123	4.187	0.864	1.801	3.323	4.444	0.837	1.857
Age^2	-6.115	4.160	-2.861	1.838	-5.809	4.184	-2.799	1.828	-4.219	4.895	-0.960	2.082	-4.789	5.248	-0.953	2.169
Has children	0.054	0.212	0.017	0.092	0.054	0.212	0.013	0.093	-0.025	0.264	0.084	0.110	-0.180	0.282	0.063	0.116
No of children	0.595	0.563	0.666	0.237	0.589	0.557	0.663	0.237	1.458	0.707	0.793	0.271	1.537	0.747	0.805	0.277
Degree	0.579	0.233	0.012	0.095	0.535	0.232	0.012	0.095	0.655	0.301	-0.024	0.104	0.599	0.317	0.001	0.110
Voc training	0.324	0.211	-0.070	0.097	0.302	0.208	-0.071	0.096	0.245	0.258	-0.195	0.126	0.389	0.271	-0.117	0.135
A Level	0.546	0.178	0.136	0.084	0.510	0.176	0.134	0.084	0.542	0.221	0.216	0.095	0.578	0.230	0.257	0.100
Unemployed	-0.190	0.205	0.030	0.100	-0.201	0.206	0.029	0.101	-0.330	0.236	-0.070	0.117	-0.307	0.247	-0.014	0.125
Student	-0.067	0.294	-0.106	0.136	-0.037	0.294	-0.103	0.138	-0.114	0.352	-0.096	0.177	0.009	0.366	-0.053	0.180
Out of lab force	-0.222	0.182	0.122	0.091	-0.246	0.191	0.120	0.094	-0.139	0.233	0.074	0.106	-0.114	0.249	1.126	0.124
Foreign born	-0.671	0.217	-0.074	0.100	-0.657	0.218	-0.071	0.100	-0.852	0.253	-0.033	0.115	-0.704	0.257	0.001	0.122
Caribbean	0.680	0.336	-0.288	0.165	0.707	0.338	-0.288	0.167	1.070	0.404	-0.415	0.171	1.159	0.439	-0.468	0.179
Indian	0.521	0.340	0.112	0.140	0.545	0.342	0.104	0.141	1.122	0.410	0.119	0.150	1.258	0.476	0.098	0.166
Afro Asian	1.257	0.331	0.265	0.144	1.261	0.334	0.255	0.145	1.895	0.439	0.268	0.160	2.055	0.491	0.272	0.174
Pakistani	1.030	0.320	0.268	0.141	1.043	0.322	0.259	0.142	1.646	0.378	0.171	0.159	1.880	0.407	0.135	0.164
Chinese	0.893	0.407	-0.042	0.173	0.864	0.421	-0.047	0.180	1.682	0.476	-0.210	0.194	2.050	0.526	-0.139	0.207
Constant	-4.874	0.841	-2.018	0.379	-4.745	0.842	-1.998	0.378	-5.480	1.073	-1.816	0.454	-5.526	1.271	-2.207	0.502
ψ	2.436	0.131	.	.	2.428	0.130	.	.	13.446	1.991	.	.	12.812	2.013	.	.
ζ	3.987	0.254	.	.	1.383	0.064	.	.	1.353	0.078	.	.	1.367	0.087	.	.
δ_2-δ_1	.	.	-1.816	0.139	.	.	0.163	0.023	.	.	0.156	0.024	.	.	0.154	0.024
δ_3-δ_2	.	.	0.211	0.025	.	.	0.212	0.026	.	.	0.225	0.031	.	.	-1.435	0.137
δ_4-δ_3	.	.	0.365	0.042	.	.	0.365	0.043	.	.	-0.995	0.129	.	.	-1.021	0.134
Mean log-likelihood	-0.669				-0.669				-0.698				-0.706			
Number of cases	4930				4930				3651				3430			
Over-identification					χ^2_1=1.44		P=0.231		χ^2_2=2.76		P=0.252		χ^2_3=6.46		P=0.091	

Table 9: **Harassment and Precaution: Marginal Effects**

	Harassment		Precaution		Harassment		Precaution		Harassment		Precaution		Harassment		Precaution	
Variable	Indep	Joint	Indep	Joint	Indep	Joint	Indep	Joint	Indep	Joint	Indep	Joint	Indep	Joint	Indep	Joint
Local																
% Black/Asian	-0.396	-0.345	-0.339	-0.236	-0.774	-0.504	-0.301	-0.174	-0.834	-0.525	-0.451	-0.349	-0.779	-0.516	-0.495	-0.509
(% Black/Asian)^2	.	.	.	.	0.966	0.431	-0.101	-0.137	1.024	0.368	-0.024	-0.006	0.762	0.276	0.086	0.315
Δ % Immigrant	.	.	.	.	.	.	.	.	0.044	0.017	0.312	0.203	-0.055	-0.047	0.294	0.212
% Prejudiced	.	.	.	.	.	.	.	.	.	.	.	.	-0.266	-0.004	-0.064	0.208
London	0.042	0.030	0.055	0.054	0.052	0.034	0.054	0.052	0.074	0.042	0.073	0.066	0.105	0.045	0.077	0.059
% Unemployed	0.282	0.236	0.385	0.270	0.320	0.249	0.389	0.256	0.313	0.280	0.439	0.409	0.365	0.291	0.430	0.391
% With degree	0.035	0.023	0.116	0.001	0.045	0.039	0.124	-0.005	-0.070	-0.039	-0.008	-0.107	-0.056	-0.053	0.028	-0.112
% Sharing facs	0.469	0.601	-0.228	0.136	0.480	0.575	-0.224	0.155	0.353	0.494	0.051	0.103	0.241	0.567	0.034	0.164
% No cent heating	-0.113	-0.091	-0.034	-0.035	-0.085	-0.082	-0.037	-0.042	0.007	-0.051	0.013	-0.013	-0.008	-0.078	0.038	0.016
Personal																
Male	0.047	0.035	-0.005	-0.008	0.046	0.034	-0.005	-0.008	0.043	0.033	-0.013	-0.010	0.034	0.032	-0.014	-0.012
Age	0.327	0.247	0.315	0.387	0.343	0.230	0.327	0.379	0.494	0.191	0.290	0.152	0.502	0.208	0.351	0.148
Age^2	-0.458	-0.375	-0.418	-0.472	-0.473	-0.358	-0.431	-0.463	-0.527	-0.258	-0.308	-0.168	-0.549	-0.299	-0.365	-0.169
Has children	0.012	0.003	-0.004	0.003	0.013	0.003	-0.004	0.002	0.006	-0.002	0.005	0.015	-0.003	-0.011	0.007	0.011
No of children	-0.002	0.036	0.080	0.110	-0.007	0.036	0.081	0.110	0.060	0.089	0.096	0.139	0.067	0.096	0.090	0.143
Degree	0.052	0.035	0.007	0.002	0.052	0.033	0.007	0.002	0.075	0.040	0.002	-0.004	0.072	0.037	0.009	0.000
Voc training	0.028	0.020	-0.012	-0.011	0.029	0.019	-0.011	-0.012	0.040	0.015	-0.023	-0.034	0.039	0.024	-0.016	-0.021
A Level	0.038	0.033	0.038	0.022	0.037	0.031	0.039	0.022	0.042	0.033	0.054	0.038	0.050	0.036	0.062	0.045
Unemployed	-0.026	-0.012	0.029	0.005	-0.024	-0.012	0.029	0.005	-0.023	-0.020	0.025	-0.012	-0.014	-0.019	0.033	-0.002
Student	0.012	-0.004	-0.022	-0.017	0.014	-0.002	-0.023	-0.017	0.024	-0.007	-0.012	-0.017	0.035	0.001	-0.011	-0.009
Out of lab force	-0.024	-0.014	0.033	0.020	-0.024	-0.015	0.033	0.020	-0.014	-0.008	0.025	0.013	-0.015	-0.007	0.029	0.021
Foreign born	-0.059	-0.041	0.015	-0.012	-0.059	-0.040	0.015	-0.012	-0.080	-0.052	0.010	-0.006	-0.078	-0.044	0.010	0.000
Caribbean	0.063	0.042	-0.079	-0.047	0.062	0.044	-0.079	-0.048	0.100	0.066	-0.098	-0.073	0.107	0.072	-0.107	-0.083
Indian	0.031	0.032	0.008	0.019	0.031	0.034	0.009	0.017	0.070	0.069	0.019	0.021	0.084	0.079	0.014	0.017
Afro Asian	0.077	0.077	0.039	0.044	0.077	0.078	0.039	0.042	0.121	0.116	0.047	0.047	0.137	0.128	0.043	0.048
Pakistani	0.065	0.063	0.015	0.044	0.066	0.064	0.015	0.043	0.110	0.101	0.018	0.030	0.133	0.117	0.005	0.024
Chinese	0.071	0.055	-0.040	-0.007	0.068	0.053	-0.040	-0.008	0.128	0.103	-0.063	-0.037	0.148	0.128	-0.061	-0.025
Goodman-Kruskal γ	0.908				0.908				0.914				0.911			

In table 10 we display the mean responses for the overall sample, as well as across the quartiles of the ethnic concentration of the respondent's neighborhood, where we use again wards as spatial units.

Nearly 30 percent of the respondents report at least some prejudice towards ethnic minority individuals, and 26 percent would mind if a close relative marries an ethnic minority person. Prejudice increases across the quartiles of the individual's ethnic neighborhood concentration - quite a remarkable difference to the decreasing pattern we observed in a similar table for racial harassment. Similarly, negative attitudes towards inter-ethnic marriage tend to increase with higher ethnic concentrations.

Table 10: **Prejudice and quartiles of ethnic concentration**

		Quartiles of Ethnic concentration			
	All	1st Q	2nd Q	3rd Q	4th Q
Prejudiced towards blacks/asians*	0.295	0.228	0.298	0.302	0.354
Ethnic marriage**	0.266	0.221	0.283	0.267	0.294

*: Wording of the question: Would you describe yourself as very prejudiced against Asian/Caribbean people, a little prejudiced, or not prejudiced at all? Variable coded as one if at least a little prejudiced against Asian and/or Caribbean.
**: Wording of the question: Would you personally mind if a close married a person of ethnic minority origin? Variable coded as one if respondent minds.

Table 11 reports the result of running a probit model on of white prejudice on ethnic neighborhood concentration and a set of other variables. The first column includes individual background characteristics and a linear term in ethnic concentration while the second column adds a quadratic term and the third adds the change in immigrant concentration between 1981 and 1991.

Among the individual characteristics, male respondents seem to be more prejudiced than female respondents, while degree holder are much less prejudiced. Other characteristics, like personal unemployment, seem to be uncorrelated with prejudice.

No significant relationship with ethnic density is found in the linear specification but addition of a quadratic term points to a well determined, initially positive but concave relationship peaking at an ethnic concentration of about 23%, which is in the top ten per cent of the distribution of ethnic minority concentrations for the white population.

As regards local economic conditions, none of those used, including unemployment, are found to be significant. These results are broadly similar to those in Dustmann and Preston (2001) where responses from several years of another British attitudinal survey are analyzed.

In the last column, we add the change in the immigration concentration over a decade as an additional regressor. The coefficients on the ethnic minority variables do not change very much, and remain jointly significant. The coefficient on the change in concentration is positive (suggesting an increase in prejudice as ethnic minority immigrants move into the area) but it is not significantly different from zero.

Table 11: **White Attitudes: Probit, Marginal Effects**

Variable	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.
Local						
% Black/Asian	0.146	0.167	1.608	0.565	1.043	0.744
(% Black/Asian)^2	.	.	-3.508	1.136	-3.233	1.441
Δ % Immigrant	.	.	.	.	1.106	1.935
London	0.116	0.040	0.073	0.038	0.109	0.041
% Unemployed	0.059	0.246	-0.147	0.202	0.448	0.507
% With degree	-0.003	0.248	-0.255	0.268	-0.031	0.306
% Sharing facs	-0.449	0.861	-0.421	0.895	-1.531	1.498
% No cent heating	-0.022	0.112	-0.062	0.098	-0.110	0.145
Personal						
Male	0.047	0.017	0.049	0.018	0.056	0.020
Age	0.001	0.029	0.005	0.029	-0.006	0.031
Age^2	-0.000	0.003	-0.001	0.003	0.001	0.003
Has children	0.034	0.046	0.041	0.046	-0.004	0.055
No of children	-0.013	0.022	-0.014	0.022	-0.002	0.026
Degree	-0.095	0.042	-0.095	0.043	-0.100	0.048
Voc training	-0.018	0.026	-0.012	0.026	-0.017	0.034
A Level	-0.014	0.020	-0.010	0.020	-0.019	0.027
Unemployed	-0.001	0.033	-0.004	0.033	0.016	0.041
Student	-0.053	0.064	-0.048	0.064	-0.023	0.071
Out of lab force	-0.038	0.024	-0.038	0.025	-0.065	0.029
Constant	-0.184	0.086	-0.190	0.088	-0.183	0.099
Mean log-likelihood	-0.600		-0.597		-0.602	
Number of cases	2620		2620		1865	

Dependent variable: Self-reported prejudice against Caribbean or/and Asian. See footnote to table 10 for wording of question.

In table 12 we report estimates for the inter-ethnic marriage variable, with the same set of specifications as before and very similar results regarding ethnic concentration.

Again, except for education and age, little evidence is found to relate individual or other area characteristics to the outcome variable.

To summarize, higher ethnic concentrations in the individual's immediate neighborhood seem to be associated, at least at all but high values of ethnic concentration, with higher hostility towards ethnic minorities. This is in stark contrast with the harassment estimates in the previous section. This suggests strongly that racial abuse is not just an intensification of hostile prejudice towards minorities. In fact at low ethnic minority densities the two measures relate to ethnic concentrations in the opposite way, indicating that, although whites in areas with higher ethnic concentration tend to be more prejudiced towards minorities, incidents of racial harassment occur less frequently. While the formation of attitudes seems therefore compatible with theories that predict a positive correlation between concentration of minorities and attitudes, the relationship between racial abuse and concentration points rather towards explanations that emphasize the opposite.

It is not unlikely that attitudes are formed consistently with group conflict theories, while harassment is reduced with concentration due to decreasing contact, as well as safety in numbers serving as a deterrent of aggression, as predicted by the power differential hypothesis. On the basis of our results, the contact hypothesis, for example, has little ground as a complete underlying explanation for attitude formation, as it should predict a negative relationship between ethnic concentration and prejudice, and it is therefore also unlikely to be a candidate for explaining racial harassment.

7 Conclusions

In this paper, we analyze the association between ethnic minority concentration, hostile attitudes towards minorities, and the probability of ethnic minorities experiencing racial hostility. Our main focus is on the relationship between ethnic concentration of minorities and economic conditions on the one side, and hostile attitudes as well as acts of racial harassment on the other. In addition, we investigate in detail precautionary behavior of minority individuals. Changes in behavior induced by fear of racial violence may lead to

Table 12: **Inter-ethnic marriage: Probit, Marginal Effects**

Variable	Coeff	S.e.	Coeff	S.e.	Coeff	S.e.
Local						
% Black/Asian	0.038	0.139	1.265	0.486	0.987	0.616
(% Black/Asian)^2	.	.	-2.925	1.060	-3.670	1.455
Δ % Immigrant	.	.	.	.	2.012	3.023
London	0.116	0.054	0.078	0.050	0.089	0.056
% Unemployed	0.049	0.340	-0.121	0.279	0.651	0.593
% With degree	-0.159	0.238	-0.370	0.253	-0.311	0.274
% Sharing facs	-1.394	0.910	-1.388	0.986	-1.556	1.532
% No cent heating	-0.025	0.119	-0.057	0.108	-0.196	0.142
Personal						
Male	0.001	0.017	0.003	0.018	-0.006	0.023
Age	0.142	0.027	0.146	0.027	0.136	0.032
Age^2	-0.008	0.003	-0.008	0.003	-0.007	0.003
Has children	-0.016	0.047	-0.011	0.046	-0.054	0.057
No of children	0.015	0.021	0.014	0.021	-0.033	0.027
Degree	-0.175	0.045	-0.175	0.045	-0.145	0.048
Voc training	-0.064	0.027	-0.059	0.027	-0.050	0.031
A Level	-0.058	0.021	-0.055	0.021	-0.051	0.025
Unemployed	-0.049	0.050	-0.051	0.050	-0.026	0.053
Student	-0.063	0.068	-0.058	0.068	-0.035	0.076
Out of lab force	-0.006	0.027	-0.006	0.027	-0.028	0.029
Constant	-0.624	0.092	-0.632	0.088	-0.639	0.113
Mean log-likelihood	-0.523		-0.597		-0.519	
Number of cases	2491		2491		1777	

Dependent variable: Respondent minds marriage of close relative with ethnic minority individual. See footnote to table 10 for wording of question.

significant restrictions of individual's liberties.

We develop a general empirical model that subsumes many of the existing theories and estimate a reduced version of that model. Our findings are interesting in several respects. First, we find strong evidence that racial harassment is not simply a stronger form of racial prejudice. Our results show that, although racial prejudice increases with ethnic concentration over most of the concentration distribution, acts of racial harassment as well as induced precautionary behavior decrease. Accordingly, these measures can not be interchangeably used to test different theories against each other. Our results are compatible with attitudes being formed according to considerations as suggested by group threat theory. Acts of harassment however follow a different process, where in addition the frequency of contact, as well as deterrence by power through numbers on the side of the minority population, may play an important role, as suggested by the power differential hypothesis.

The differentiation of mechanisms leading to hostile attitudes, and harassment is further suggested by findings on other regressors - for example while unemployment in the local community does led to higher frequencies of harassment, no well determined relation with white attitudes is evident.

References

- Becker, G. S., "Crime and Punishment: An Economic Approach", *Journal of Political Economy* 76 (1968), 169-217.
- Blalock, H.M., *Toward a Theory of Minority Group Relations* (New York: Wiley, 1967).
- Blau, P.M., *Inequality and Heterogeneity: A Primitive Theory of Societal Structure*, (New York: Free Press, 1977).
- Blau, P. M., *Structural Contexts of Opportunities*, (Chicago: University of Chicago Press, 1994).
- Blumer, H., "Race Prejudice as a Sense of Group Position", *Pacific Sociological Review* 1 (1958), 3-7.
- Bobo, L., "Whites' Opposition to Busing: Symbolic Racism or Realistic Group Conflict?", *Journal of Personality and Social Psychology* 45 (1983), 1196-1210.
- Bowling, B., *Violent Racism: Victimisation, Policing and Social Context*, (Oxford: OUP, 1998).
- Clark, W.A.V., "Neighborhood Tipping in Multiethnic/Racial Context", *Journal of Urban Affairs* 15 (1993), 161-172.
- Dollard, J., L. W. Doob, N. E. Miller, O. H. Mowrer and R. R. Sears, *Frustration and Aggression*, (New Haven: Yale Press, 1939).
- Dustmann, C. and I. Preston, "Attitudes to Ethnic Minorities, Ethnic Context and Location Decisions", *The Economic Journal* 111 (2001), 353-373.
- Dustmann, C. and I. Preston, "Racial and Economic Factors in Attitudes Towards Migration", CReAM DP1 (2004).
- Hovland, C. I. and R. R. Sears, "Minor Studies of Aggression: VI. Correlation of Lynchings with Economic Indices", *Journal of Psychology* 9 (1940), 301-310.

- Ira N. Gang, Francisco L. Rivera-Batiz and Myeong-Su Yun, " Economic Strain, Ethnic Concentration and Attitudes Towards Foreigners in the European Union", IZA DP5 578 (2002)

- Green, D. P., J. Glaser and A. Rich, "From Lynching to Gay Bashing: The Elusive Connection Between Economic Conditions and Hate Crime", *Journal of Personality and Social Psychology* 75 (1998), 82-92.

- Green, D. P., L. H. McFalls and J. K. Smith, "Hate Crime: An Emergent Research Agenda", *Annual Review of Sociology* 27 (2001), 479-504.

- Green, D. P., D. Z. Strolovich, and J. S. Wong, "Defended Neighborhoods, Integration, and Racially Motivated Crimes", *American Journal of Sociology* 104 (1998), 372-403.

- Home Office publication, "Statistics on Race and the Criminal Justice System", (2000) www.homeoffice.org.uk/rds/pdfs/s95race00.pdf

- Karlsen S. and J. Nazroo, "The Relationship between Racial Discrimination, Social Class and Health among Ethnic Minority Groups", *American Journal of Public Health* (2003), forthcoming.

- Kinder, D.R. and T. Mendelberg, "Cracks in American Apartheid: The Political Impact of Prejudice among Desegregated Whites", *Journal of Politics* 57 (1995), 402-424.

- Krueger, A. and J. S. Pischke, "A Statistical Analysis of Crime Against Foreigners in Unified Germany", *Journal of Human Resources* 32 (1997), 182-209.

- Levin, J. and J. McDevitt, *Hate Crimes: The Rising Tide of Bigotry and Bloodshed*, (New York: Plenum Press, 1993).

- Le Vine, R.A. and D. T. Campbell, *Ethnocentrism*, (New York: Plenum Press, 1972).

- Mayda, A.M., "Who is Against Immigration? A Cross-Country Investigation of Attitudes towards Immigrants", Job Market Paper, Department of Economics, Harvard University, 2003).

- Park, A., J. Curtice, K. Thomson, L. Jarvis and C. Bromley, "British Social Attitudes - Continuity and Change over Two Decades", (London: Sage Publication Ltd, 2003)

- Pettigrew, T. F., "Intergroup Contact Theory", *Annual Review of Psychology* 49 (1998), 65-85.

- Powers, D. A. and C. G. Ellison, "Interracial Contact and Black racial Attitudes: The Contact Hypothesis and Selectivity Bias", *Social Forces* 74 (1995), 205-226.

- Quillian, L., "Prejudice as a Response to Perceived Group Threat:Population composition and Anti-Immigrant and Racial Prejudice in Europe", *American Sociological Review* 60 (1995), 586-611.

- Scheve, K. and Slaughter, M., "Labor-Market Competition and Individual Preferences Over Immigration Policy", *Review of Economics and Statistics* 83 (2001), 133-145.

- Suttles, G.D., *The Social Construction of Communities*, (Chicago: Chicago University Press, 1972)

- Smith, S.J., *The Politics of "Race" and Residence: Citizenship, Segregation and White Supremacy in Britain*, (Cambridge: Polity Press, 1989).

- Tolnay, S. E., E. M. Beck and J. L. Massey, "The Power Threat Hypothesis and Black Lynching: 'Wither' the Evidence?", *Social Forces* 67 (1989), 634-641.

- Virdee, S., "Racial Harassment", in: T. Modood, R. Berthoud, J. Lakey, J.Nazroo, P. Smith, S. Virdee and S. Beishon (eds), *Ethnic Minorities in Britain: Diversity and Disadvantage*, (London: Policy Studies Institute, 1997)

- Virdee, S., *Racial Violence and Harassment*, (London: Policy Studies Institute, 1995).